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| 10/800,940 | 03/15/2004 | Hidenori Usuda | 9319H-000721 | 1285 |

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|---|---|
| GARCIA JR, RENE | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/800,940 | USUDA, HIDENORI | |
| | Examiner | Art Unit | |
| | Rene Garcia, Jr. | 2853 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-26* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Information Disclosure Statement*

2. Examiner acknowledges, with regards to Information Disclosure Statement filed 25 January 2006, that Communication from the Korean Patent Office was filed and received with the office as stated in applicant's remarks filed 22 May 2006 on page 12. However it is still maintained that this information has not been considered because no English translation or concise explanation has been provided as required by 37 CFR 1.98 (a)(3)(i or ii).

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kitahara et al. (US 6,328,395).

**Kitahara et al. discloses the following claimed limitations:**

*regarding claim 1, method of controlling the driving of a function liquid droplet ejection head/**print head, 10/** having disposed therein a plurality of nozzle arrays with a different function liquid droplet ejection amount per unit nozzle (col. 5, lines 17-20; col. 2, lines 5-9)

*wherein, in one print cycle, driving of the plurality of nozzle arrays is controlled by using a single drive signal having a plurality of ejection pulses corresponding to the plurality of nozzle arrays (col. 5, lines 57-60; col. 6, line 66- col. 7, line 27)

*regarding claim 2, plurality of ejection pulses have waveforms which are different from each other in accordance with specifications of corresponding nozzle arrays (fig. 4; col. 6, line 66 – col. 7, line 27)

*regarding claim 8, function liquid droplet ejection apparatus/**ink jet printer**/ comprising: (col. 5, line 17-20)

*function liquid droplet ejection head/**print head, 10**/ having a function liquid/**ink**/ disposed therein and a plurality of nozzle arrays with a different function liquid droplet ejection amount per unit nozzle (col. 5, lines 17-21; col. 2, lines 4-9), the function liquid droplet ejection head being movable relative to a workpiece (col.5, lines 9-16)

*control means for controlling driving of the plurality of nozzle arrays by using a single drive signal /**drive signal generator circuit, 8**/ (col. 4, lines 30-32)

*wherein the drive signal has a plurality of ejection pulses corresponding to the plurality of nozzle arrays in one print cycle (col. 5, lines 57-60; fig. 4)

*regarding claim 9, plurality of ejection pulses have waveforms which are different from each other in accordance with specifications of corresponding nozzle arrays (fig. 4; col. 6, line 66- col. 7, line 27)

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (US 6,328,395) in view of Minowa et al. (US 2001/0002134).

**Kitahara et al. discloses the claimed limitations except for the following:**

*regarding claims 3 and 10, control means controls the plurality of nozzle arrays by using an identical ejection pulse in case of performing flushing which is function recovery processing by waste discharging of liquid droplets from all nozzles

**Minowa et al. disclose the following:**

*regarding claims 3 and 10, control means controls the plurality of nozzle arrays by using an identical ejection pulse in case of performing flushing which is function recovery processing by waste discharging of liquid droplets from all nozzles (paragraphs 0057 and 0055) for the purpose of preventing nozzle clogging and maintain printing performance

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize control means controls the plurality of nozzle arrays by using an identical ejection pulse in case of performing flushing which is function recovery processing by waste discharging of liquid droplets from all nozzles as taught by Minowa et al. into Kitahara et al. for the purpose of preventing nozzle clogging and maintain printing performance.

7. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (US 6,328,395) in view of Junhua (US 200/0085962).

**Kitahara et al. discloses the claimed limitations except for the following:**

*regarding claim 4, drive signal has a micro oscillation pulse which subjects a function liquid to form a meniscus of each nozzle to micro oscillation, and wherein only one waveform of the micro oscillation pulse is inputted in said one print cycle

*regarding claim 5, micro oscillation pulse is inputted before input of the plurality of ejection pulses in said one print cycle

**Junhua disclose the following:**

*regarding claim 4, drive signal has a micro oscillation pulse**/vibrating pulse/** which subjects a function liquid to form a meniscus of each nozzle to micro oscillation, and wherein only one waveform of the micro oscillation pulse is inputted in said one print cycle (paragraph 0028 & 0086; fig. 3) for the purposes agitating ink in the vicinity of nozzle orifice.

*regarding claim 5, micro oscillation pulse is inputted before input of the plurality of ejection pulses in said one print cycle (paragraph 0028 & 0086; fig. 3) for the purposes agitating ink in the vicinity of nozzle orifice.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize drive signal has a micro oscillation pulse which subjects a function liquid to form a meniscus of each nozzle to micro oscillation, and wherein only one waveform of the micro oscillation pulse is inputted in said one print cycle; and micro oscillation

pulse is inputted before input of the plurality of ejection pulses in said one print cycle as taught by Junhua into Kitahara et al. for the purpose agitating ink in the vicinity of nozzle orifice.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (US 6,328,395) in view of Takahashi (US 6,527,354).

**Kitahara et al. discloses the claimed limitations except for the following:**

*regarding claim 6, drive signal has a damping pulse for damping residual oscillation of a pressure generating elementwhich generates pressure fluctuations in a cavity communicated with each nozzle, and wherein, in said one print cycle, the damping pulse is inputted after input of the plurality of ejection pulses and has a waveform corresponding to a waveform of the last inputted ejection pulse

**Junhua disclose the following:**

*regarding claim 6, drive signal has a damping pulse/**ink droplet reducing pulse, 2/** for damping residual oscillation of a pressure generating element/**actuator substrate, 601/** (col. 3, line 36) which generates pressure fluctuations in a cavity communicated with each nozzle, and wherein, in said one print cycle, the damping pulse is inputted after input of the plurality of ejection pulses and has a waveform corresponding to a waveform of the last inputted ejection pulse (col. 5, lines 25-32; fig. 1)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize drive signal has a damping pulse for damping residual oscillation of a pressure generating element which generates pressure fluctuations in a cavity communicated with each nozzle, and wherein, in said one print cycle, the damping pulse is inputted after input of the plurality of ejection pulses and has a waveform corresponding to a

waveform of the last inputted ejection pulse as taught by Takahashi into Kitahara et al. for the purpose preventing meniscus from ejecting and reducing size of droplet.

9. Claims 11-20 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (US 6,328,395) in view of Nakamura et al. (US 6,933,958).

**Kitahara et al. discloses the claimed limitations except for the following:**

*regarding claim 11, electro-optic device manufactured by using the function liquid droplet ejection apparatus according to claim 8

*regarding claim 12, method of manufacturing a liquid crystal display device, in which a multiplicity of filter elements are formed on a color filter substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing filter materials of respective colors into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the filter materials, an form the multiplicity of the filter elements

*regarding claim 13, method of manufacturing an organic EL device, in which an EL layer is formed in each of a multiplicity of picture element pixels on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing luminescent materials of respective colors into the function liquid droplet ejection head

*and performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the luminescent materials, and form the multiplicity of EL layers

*regarding claim 14, method of manufacturing an electron emission device, in which a multiplicity of phosphors are formed on electrodes by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing fluorescent materials of respective colors into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the electrodes to selectively eject the fluorescent materials, and form the multiplicity of phosphors on the electrodes

*regarding claim 15, method of manufacturing a PDP device, in which phosphors are formed in each of a multiplicity of concave portions on a rear substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing fluorescent materials of respective colors into the function liquid droplet ejection head

*and performing a relative scanning between the function liquid droplet ejection head and the rear substrate to selectively eject the fluorescent materials, and form the phosphors in each of the multiplicity of concave portions on the rear substrate

*regarding claim 16, method of manufacturing an electrophoretic display device, in which migrating bodies are formed in each of a multiplicity of concave portions on electrodes by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing migrating body materials of respective colors into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the electrodes to selectively eject the migrating body materials, and form the multiplicity of the migrating bodies in each of the concave portions on the electrodes

*regarding claim 17, method of manufacturing a color filter, in which a color filter having disposed therein a multiplicity of filter elements is manufactured by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing filter materials of respective colors in the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the filter materials, and form the multiplicity of the filter elements

*regarding claim 18, introducing a translucent coating material into the function liquid droplet ejection head after the filter elements are formed

*performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the coating material, and form an overcoat film that covers the multiplicity of filter elements

*regarding claim 19, manufacturing an organic EL in having a multiplicity of picture element pixels inclusive of EL layers arranged on a substrate using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing luminescent materials of respective colors into the function liquid droplet ejection head

*performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the luminescent materials, and form the multiplicity of EL layers

*regarding claim 20, multiplicity of pixel electrodes corresponding to the EL layers are formed between the multiplicity of EL layers and the substrate, said method further comprising the steps of:

*introducing a liquid electrode material into the function liquid droplet ejection head

*performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the liquid electrode material, and form a multiplicity of the pixel electrodes

*regarding claim 22, forming a spacer, having a multiplicity of particulate spacers that constitute a minute cell gap between two substrates using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing a particle material constituting the spacers into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and at least one of the substrates to selectively eject the particle material, and form the spacers on the substrate

*regarding claim 23, forming a metallic wiring on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing a liquid metal material into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the liquid metal material, and form the metallic wiring

*regarding claim 24, forming a lens having a multiplicity of microlenses disposed on a substrate using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing a lens material into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the lens material, and form the multiplicity of microlenses

*regarding claim 25, manufacturing a resist of an arbitrary shape on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing a resist material into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the resist material, and form the resist

*regarding claim 26, forming a light diffusion body having a multiplicity of light diffusion bodies are formed on a substrate, by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of:

*introducing a light diffusion material into the function liquid droplet ejection head

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the light diffusion material, and form the multiplicity of light diffusion bodies

**Nakamura et al. disclose the following:**

*regarding claim 11, electro-optic device manufactured by using the function liquid droplet ejection apparatus according to claim 8 (col. 39, lines 7-12) for the purpose of manufacturing an electro-optic device

*regarding claim 12, method of manufacturing a liquid crystal display device, in which a multiplicity of filter elements are formed on a color filter substrate by using the function liquid

droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 39, lines 7-12)

*introducing filter materials of respective colors into the function liquid droplet ejection head (col. 39, lines 13-22)

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the filter materials, and form the multiplicity of the filter elements (col. 27, lines 49-63) for the purpose of manufacturing a liquid crystal display

*regarding claim 13, method of manufacturing an organic EL device, in which an EL layer is formed in each of a multiplicity of picture element pixels on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 5, lines 54-63, col. 37, lines 18-28; col. 42-44)

*introducing luminescent materials of respective colors into the function liquid droplet ejection head (col. 49, line 54; col. 39, line 50)

*and performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the luminescent materials, and form the multiplicity of EL layers (col. 27, lines 49-63) for the purpose of manufacturing an organic EL device

*regarding claim 14, method of manufacturing an electron emission device, in which a multiplicity of phosphors are formed on electrodes by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 4, lines 47-56; col. 48, lines 20-27)

*introducing fluorescent materials of respective colors into the function liquid droplet ejection head (col. 48, lines 20-27)

*performing a relative scanning between the function liquid droplet ejection head and the electrodes to selectively eject the fluorescent materials, and form the multiplicity of phosphors on the electrodes (col. 27, lines 49-63) for the purpose of manufacturing an electron emission device

*regarding claim 15, method of manufacturing a PDP device, in which phosphors are formed in each of a multiplicity of concave portions on a rear substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 4, lines 57-67; col. 48, lines 28-35)

*introducing fluorescent materials of respective colors into the function liquid droplet ejection head (col. 48, lines 28-35)

*and performing a relative scanning between the function liquid droplet ejection head and the rear substrate to selectively eject the fluorescent materials, and form the phosphors in each of the multiplicity of concave portions on the rear substrate (col. 27, lines 49-63) for the purpose of manufacturing a PDP device

*regarding claim 16, method of manufacturing an electrophoretic display device, in which migrating bodies are formed in each of a multiplicity of concave portions on electrodes by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 5, lines 1-11; col. 48, lines 36-44)

*introducing migrating body materials of respective colors into the function liquid droplet ejection head (col. 48, lines 36-44)

*performing a relative scanning between the function liquid droplet ejection head and the electrodes to selectively eject the migrating body materials, and form the multiplicity of the migrating bodies in each of the concave portions on the electrodes (col. 27, lines 49-63) for the purpose of manufacturing an electorphoretic display device.

*regarding claim 17, method of manufacturing a color filter, in which a color filter having disposed therein a multiplicity of filter elements is manufactured by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 37, lines, 34-42; col. 37, lines 18-28; col. 5, lines 26-34)

*introducing filter materials of respective colors in the function liquid droplet ejection head (col. 37, lines 34-42)

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the filter materials, and form the multiplicity of the filter elements (col. 27, lines 49-63) for the purpose of manufacturing a color filter

*regarding claim 18, introducing a translucent coating material into the function liquid droplet ejection head after the filter elements are formed (col. 25, lines 60-64)

*performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the coating material, and form an overcoat film that covers the

multiplicity of filter elemnents (col. 27, lines 49-63) for the purpose of manufacturing a color filter

*regarding claim 19, manufacturing an organic EL having a multiplicity of picture element pixels inclusive of EL layers arranged on a substrate using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 5, lines 54-63; col. 37, lines 18-28; col. 39, lines 42-44; fig. 52-66)

*introducing luminescent materials of respective colors into the function liquid droplet ejection head (col. 49, line 54; col. 39, line 50)

*performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the luminescent materials, and form the multiplicity of EL layers (col. 27, lines 49-63) for the purpose of manufacturing an organic EL device

*regarding claim 20, multiplicity of pixel electrodes corresponding to the EL layers are formed between the multiplicity of EL layers and the substrate, said method further comprising the steps of: (col. 40, lines 8-11)

*introducing a liquid electrode material into the function liquid droplet ejection head (coll 6, lines 7-16; col. 39, line 3 –7)

*performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the liquid electrode material, and form a multiplicity of the pixel electrodes (col. 27, lines 49-63) for the purpose of manufacturing an organic EL device

*regarding claim 22, forming a spacer having a multiplicity of particulate spacers that constitute a minute cell gap between two substrates using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 6, lines 26-37; col. 48, lines 50 –62)

*introducing a particle material constituting the spacers into the function liquid droplet ejection head (col. 48, lines 50-62)

*performing a relative scanning between the function liquid droplet ejection head and at least one of the substrates to selectively eject the particle material, and form the spacers on the substrate (col. 27, lines 49-63) for the purpose of forming a spacer

*regarding claim 23, forming a metallic wiring on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 6, lines 38-46; col. 48, line 63 – col. 49, line 8)

*introducing a liquid metal material into the function liquid droplet ejection head (col. 48, line 63 – col. 49, line 8)

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the liquid metal material, and form the metallic wiring (col. 27, lines 49-63) for the purpose of forming a metallic wiring on a substrate

*regarding claim 24, forming a lens having a multiplicity of microlenses disposed on a substrate using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 6, lines 47-55; col. 49, lines 8-15)

*introducing a lens material into the function liquid droplet ejection head (col. 49, lines 8-15)

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the lens material, and form the multiplicity of microlenses (col. 27, lines 49-63) for the purpose of forming a lens

*regarding claim 25, manufacturing a resist of an arbitrary shape on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 6, lines 56-63; col. 49, lines 16-25)

*introducing a resist material into the function liquid droplet ejection head (col. 49, lines 16-25)

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the resist material, and form the resist (col. 27, lines 49-63) for the purpose of manufacturing a resist

*regarding claim 26, forming a light diffusion body having a multiplicity of light diffusion bodies formed on a substrate using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: (col. 6, line 64-col. 7, line 5; col. 49, lines 26-35)

*introducing a light diffusion material into the function liquid droplet ejection head (col. 49, lines 26-35)

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the light diffusion material, and form the multiplicity of light diffusion bodies (col. 27, lines 49-63) for the purpose of forming a light diffusion body

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize an electro-optic device manufactured by using the function liquid droplet ejection apparatus according to claim 8; method of manufacturing a liquid crystal display device, in which a multiplicity of filter elements are formed on a color filter substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing filter materials of respective colors into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the filter materials, an form the multiplicity of the filter elements; method of manufacturing an organic EL device, in which an EL layer is formed in each of a multiplicity of picture element pixels on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing luminescent materials of respective colors into the function liquid droplet ejection head, and performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the luminescent materials, and form the multiplicity of EL layers; method of manufacturing an electron emission device, in which a multiplicity of phosphors are formed on electrodes by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing fluorescent materials of respective colors into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the electrodes to selectively eject the fluorescent materials, and

form the multiplicity of phosphors on the electrodes; method of manufacturing a PDP device, in which phosphors are formed in each of a multiplicity of concave portions on a rear substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing fluorescent materials of respective colors into the function liquid droplet ejection head, and performing a relative scanning between the function liquid droplet ejection head and the rear substrate to selectively eject the fluorescent materials, and form the phosphors in each of the multiplicity of concave portions on the rear substrate; method of manufacturing an electrophoretic display device, in which migrating bodies are formed in each of a multiplicity of concave portions on electrodes by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing migrating body materials of respective colors into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the electrodes to selectively eject the migrating body materials, and form the multiplicity of the migrating bodies in each of the concave portions on the electrodes; method of manufacturing a color filter, in which a color filter having disposed therein a multiplicity of filter elements is manufactured by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing filter materials of respective colors in the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the filter materials, and form the multiplicity of the filter elements; introducing a translucent coating material into the function liquid droplet ejection head after the filter elements are formed, performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the coating material, and form an overcoat

film that covers the multiplicity of filter elements; manufacturing an organic EL in having a multiplicity of picture element pixels inclusive of EL layers arranged on a substrate using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing luminescent materials of respective colors into the function liquid droplet ejection head, performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the luminescent materials, and form the multiplicity of EL layers; multiplicity of pixel electrodes corresponding to the EL layers are formed between the multiplicity of EL layers and the substrate, said method further comprising the steps of: introducing a liquid electrode material into the function liquid droplet ejection head, performing relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the liquid electrode material, and form a multiplicity of the pixel electrodes; forming a spacer, having a multiplicity of particulate spacers that constitute a minute cell gap between two substrates using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing a particle material constituting the spacers into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and at least one of the substrates to selectively eject the particle material, and form the spacers on the substrate; forming a metallic wiring on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing a liquid metal material into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the liquid metal material, and form the metallic wiring; forming a lens having a multiplicity of microlenses disposed on a substrate using the function liquid

droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing a lens material into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the lens material, and form the multiplicity of microlenses; manufacturing a resist of an arbitrary shape on a substrate by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing a resist material into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the resist material, and form the resist; and forming a light diffusion body having a multiplicity of light diffusion bodies are formed on a substrate, by using the function liquid droplet ejection apparatus according to claim 8, the method comprising the steps of: introducing a light diffusion material into the function liquid droplet ejection head, performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the light diffusion material, and form the multiplicity of light diffusion bodies

as taught by Nakamura et al. into Kitahara et al. for the purposes of manufacturing an electro-optic device; manufacturing a liquid crystal display; manufacturing an organic EL device; manufacturing an electron emission device; manufacturing a PDP device; manufacturing an electorphoretic display device; manufacturing a color filter; manufacturing an organic EL device; forming a spacer; forming a metallic wiring on a substrate; forming a lens; manufacturing a resist; and forming a light diffusion body.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (US 6,328,395) modified by Minowa et al. (US 2001/0002134) as applied to claim 20 above, and further in view of Yamaguchi et al. (US 6,364,450).

**Kitahara et al. modified by Minowa et al. disclose the following claimed limitations:**

*regarding claim 21, introducing, after the EL layers are formed, the liquid electrode material into the function liquid droplet ejection head (col. 6, lines 7-16)

*performing a relative scanning between the function liquid droplet ejection head and the substrate to selectively eject the liquid electrode material, and form the counter electrode (col. 27, lines 49-63)

**Kitahara et al. modified by Minowa et al. does not disclose the following claimed limitations:**

*regarding claim 21, counter electrode is formed so as to cover the multiplicity EL layers

**Yamaguchi et al. discloses the following:**

*regarding claim 21, counter electrode is formed so as to cover the multiplicity EL layers (col. 6, lines 49-67; col. 11, lines 19-51) for the purpose of manufacturing an organic EL device.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a counter electrode is formed so as to cover the multiplicity EL layers as taught by Yamaguchi et al. into Kitahara et al. modified by Minowa et al. for the purpose of manufacturing an organic EL device.

***Response to Arguments***

11. Applicant's arguments filed 22 May 2006 have been fully considered but they are not persuasive.

12. With regards to arguments presented on page 14, paragraphs 2 and 3, applicant is arguing that weight of a liquid droplet ejected and amount of liquid ejected are different. However the claimed limitations do not exclude weight as being considered an amount since claimed limitations only specify an amount be different without with any indication this amount being related to weight or volume. Therefore examiner takes the position the claimed limitations are broad in the sense to cover a weight of a droplet ejected. Furthermore with regards to liquids having different densities, it is typical of the liquid within a respective cartridge to have a uniform density and therefore adjusting the weight would still result with a different amount.

13. With regards to arguments presented on page 14, paragraph 4, applicant is arguing that Kitahara et al. (US 6,328,395) fails to teach or suggest varying a function liquid droplet ejection amount of each nozzle in a series of nozzles such that each nozzle ejects a different amount of liquid. As provided in rejection above regarding claim 1 and 8, Kitahara et al. teaches an inkjet printer capable of ejecting a plural number of different ink droplets of different weights from one and the same print nozzle. As provided in the specification, col. 7, lines 6-20, the waveform provides pulses to eject droplets of varying weights. As presented above, no claim limitation(s) has been provided to distinguish that weight is not an amount in its broadest interpretation.

***Allowable Subject Matter***

14. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The primary reason for the allowance of claim 7 is the inclusion of the method steps of a liquid

droplet ejection head that includes plurality of nozzle arrays include a first nozzle array which ejects a first function liquid droplet ejection amount and a second nozzle array which ejects a second function liquid droplet ejection amount which is smaller than the first function liquid droplet ejection amount, and wherein a number of nozzles in the second nozzle array is two times the number of nozzles in the first nozzle array. It is these steps found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

***Conclusion***

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Communications with the USPTO***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rene Garcia, Jr. whose telephone number is (571) 272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rene Garcia Jr
*07/06*

STEPHEN MEIER
SUPERVISORY PATENT EXAMINER